



BIOLOGY NMDCAT EARLIER PREP

PMC UNIT WISE TEST Unit-13

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SAEED MDCAT TEAM

TOPIC:

✓ **Chromosomes and DNA**

Q. 1 A nucleosome is:

- A. Darkly stained body composed of RNA and proteins found in the nucleus
- B. A protein that helps to organize the structure of chromosomes
- C. Another word for a chromosome
- D. A structure composed of DNA wrapped around histone octamer

Q. 2 Nucleosome is an essential bio-molecule, associated with which cell organelle?

- A. Mitochondria
- B. Nucleus
- C. Chloroplast
- D. Golgi complex

Q. 3 There are 44 chromosomes in the somatic cells of rabbit. How many chromosomes does a rabbit receive from its mother?

- A. 22
- B. 44
- C. 11
- D. 42

Q. 4 A chromosome in which the centromere is situated close to its end so that one arm is very short and the other very long is:

- A. Metacentric
- B. Acrocentric
- C. Telocentric
- D. Sub-metacentric

Q. 5 Which option is correct regarding the amino acids found in histone proteins?

	Amino acids	Nature	Charge
A.	Aspartate and lysine	Basic	Negative
B.	Arginine and lysine	Basic	Positive
C.	Arginine and leucine	Acidic	Positive
D.	Aspartate and leucine	Acidic	Negative

Q. 6 All of the following occur during mRNA formation except:

- A. Addition of primer
- B. Involvement of promoter site
- C. Formation of DNA-RNA hybrid
- D. Formation of hydrogen bond

Q. 7 Which is true about structure of heterochromatin?

- A. Loosely packed and stains light
- B. Densely packed and stains light
- C. Loosely packed and stains dark
- D. Densely packed and stains dark

Q. 8 F. Griffith used mixture suspension of heat-killed pathogenic and live non-pathogenic strains of *S. pneumoniae* and the following result was achieved. What does this result depict?



- A. Polysaccharide coat contained the genetic material
- B. Information specifying polysaccharide coat passed from dead to live strain of *S. pneumoniae*
- C. Polysaccharide coat reduces virulence and causes death of mice
- D. Polysaccharide coat is necessary for transferring the genetic material to other strain

Q. 9 The modern concept of gene is a:

- A. Segment of DNA
- B. Functional unit of DNA
- C. Segment of chromosome
- D. Segment of DNA capable of crossing over

Q. 10 The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cells. How is this DNA accommodated?



- A. DNase digestion
C. Deletion of nonessential genes
- Q. 11** The genetic transformation experiments on *S. pneumoniae* gave first undoubted evidence that:
A. DNA is the genetic material
C. Chromosomes are made of DNA
B. DNA is made of nucleotides
D. RNA is synthesized on a DNA template
- Q. 12** Transformation efficiency of bacteria would be drastically reduced if the transforming material is treated with:
A. Lipase
C. Protease
B. Ribonuclease
D. Deoxyribonuclease
- Q. 13** The stop sequence for transcription is present in/on:
A. DNA
C. RNA
B. Sigma factor
D. Core RNA polymerase
- Q. 14** In Meselson and Stahl experiment, ^{15}N can only be differentiated on the basis of:
A. Radioactivity
C. Electrophoretic mobility
B. Physical observation
D. Density gradient centrifugation
- Q. 15** As a result of replication, parental DNA would become completely dispersed and that each strand of all the daughter molecules would be a mixture of old and new DNA. This is called as:
A. Conservative idea
C. Dispersive idea
B. Disruptive idea
D. Semi-conservative idea
- Q. 16** During semi-conservative replication of DNA molecule, _____ structure of DNA remains conserved.
A. Primary
C. Secondary
B. Tertiary
D. Quaternary
- Q. 17** DNA polymerase helps in:
A. Renaturation of DNA
C. Joining monomers of DNA
B. Proof reading of RNA
D. Splitting of two DNA strands
- Q. 18** Feature that does not belong to DNA polymerase-III:
A. It can add nucleotides only to 3' end of parent strand
B. It can initiate synthesis of new strand on its own
C. It needs primer to start its function
D. It proceed replication from 5' to 3' on growing strand
- Q. 19** The elongation of leading stand during DNA synthesis:
A. Occurs in 3' → 5' direction
C. Depends on action of DNA polymerase
B. Produces Okazaki fragment
D. Continues away from replication fork
- Q. 20** The replication of DNA is possible due to:
A. Hydrogen bonding
C. Complementary base pairing rules
B. Phosphate backbone
D. Hydrophobic interactions among adjacent bases
- Q. 21** During replication of DNA, Okazaki fragments are constructed in the direction of:
A. 3' → 5'
C. 5' → 3'
B. 5' → 3'
D. 3' → 3'
- Q. 22** All of the following enzymes are involved in formation of phosphodiester linkages during DNA replication except:
A. Helicase
C. DNA Polymerase
B. Primase
D. DNA Ligase
- Q. 23** How many amino acids have only a single codon?
A. 1
C. 3
B. 2
D. 4
- Q. 24** The process in which a complimentary copy of the code from a gene is produced by RNA polymerase in the nucleus is:
A. Proof reading
C. DNA Replication
B. Transcription
D. Translation
- Q. 25** Which statement regarding prokaryotic and eukaryotic transcription is correct?

	Prokaryote	Eukaryote
A.	Three types of RNA polymerases	Only single type of RNA polymerase



B.	Takes place in cytoplasm	Takes place in nucleus
C.	5' end of Mrna is formed first	3' end of mRNA is formed first
D.	Promoter regions lie at -25 and -70	Promoter regions lie at -10 and -35

- Q. 26** During transcription, the DNA site at which RNA polymerase binds is called:
 A. Receptor region
 B. Enhancer region
 C. Regulatory region
 D. Promoter region
- Q. 27** The eukaryotic mRNA is modified by the addition of cap. The cap is in the form of:
 A. Poly-A nucleotides linked to 3' end
 B. 7-methyl GTP linked 5' to 3'
 C. 7-methyl GTP linked 5' to 5'
 D. Poly-A nucleotides linked to 5' end
- Q. 28** Function of three types of RNA polymerases performed in eukaryotes are:

	RNA polymerase I	RNA polymerase II	RNA polymerase III
A.	Synthesizes tRNA	Synthesizes mRNA	Synthesizes rRNA
B.	Synthesizes rRNA	Synthesizes mRNA	Synthesizes tRNA
C.	Synthesizes mRNA	Synthesizes rRNA	Synthesizes tRNA
D.	Synthesizes rRNA	Synthesizes tRNA	Synthesizes mRNA

- Q. 29** Which of the following statement is correct regarding tRNA?
 A. Its 3' end binds with $-\text{COOH}$ group of amino acid
 B. Its 3' end binds with $-\text{NH}_2$ group of amino acid
 C. Its 5' end binds with $-\text{COOH}$ group of amino acid
 D. Its 5' end binds with $-\text{NH}_2$ group of amino acid
- Q. 30** Which of the following enzyme makes short RNA oligonucleotide fragment using DNA as template?
 A. Primase
 B. DNA gyrase
 C. DNA helicase
 D. DNA polymerase-I
- Q. 31** Arrangement of three successive bases in the genetic code signifies:
 A. Protein
 B. Plasmids
 C. Nucleic acid
 D. Amino acid
- Q. 32** In eukaryotic genetic code dictionary, how many codons are used to code for all the 20 amino acids found in proteins?
 A. 61
 B. 60
 C. 20
 D. 64
- Q. 33** If the codon of an mRNA is AUG then what should be its anti-codon on tRNA?
 A. TAC
 B. AUG
 C. UAC
 D. CUA
- Q. 34** In mitochondria, UGA specifies:
 A. Tryptophan
 B. Arginine
 C. Stop codon
 D. Alanine
- Q. 35** UGA, UAG and UAA are called termination codons because they:
 A. Terminate anti-codon
 B. Do not specify any amino acid
 C. Are present at the beginning of mRNA
 D. Indicate initiation of polypeptide chain
- Q. 36** All the terminator codons begin with the nucleotide of:
 A. Uracil
 B. Adenine
 C. Guanine
 D. Cytosine
- Q. 37** Out of the given combinations, which one represents the integrated protein synthesizing machinery?
 A. mRNA, tRNA and amino acid
 B. Ribosomes, tRNA and amino acid
 C. tRNA, ribosome, nucleus and mRNA
 D. Ribosomes, tRNA, mRNA and amino acid
- Q. 38** The first step in the biosynthesis of polypeptide is catalyzed by:
 A. Terminal transferase
 B. Peptidyl transferase
 C. Initiation factors
 D. Aminoacyl tRNA synthetases
- Q. 39** Peptide bond between the amino acids at 'P' and 'A'-sites is catalyzed by:
 A. Small ribosomal subunit
 B. Elongation factor
 C. Initiation factor
 D. Large ribosomal subunit
- Q. 40** During translation, how many codons are exposed on P site of ribosome at one time?
 A. 1
 B. 2



- C. 3
D. 4
- Q. 41 Elongation factor attaches aminoacyl-tRNA at:
A. P-site
B. A-site
C. E-site
D. I-site
- Q. 42 mRNA and tRNA interact to translate on the surface of:
A. Nucleus
B. Ribosomes
C. Nucleolus
D. Cell membrane
- Q. 43 It stabilize single stranded DNA during DNA replication:
A. Helicase
B. Ligase
C. Primase
D. SSBPs
- Q. 44 A specialized non-transcribed structure that caps each end of the chromosome is called:
A. Transcription factor
B. Telocentric
C. Telomere
D. Transposons
- Q. 45 Which of the following propound for the first time that genes reside on the chromosomes?
A. Cell theory
B. Chromosomal theory of inheritance
C. Meselson-Stahl experiment
D. Hardy-Weinberg theorem
- Q. 46 In case of prokaryotic cells, the first amino acid incorporated during translation is:
A. Methionine
B. N-formyl methionine
C. Serine
D. Aspartate
- Q. 47 All of the following processes occur naturally in human cells except:
A. Replication
B. Transcription
C. Reverse transcription
D. Translation
- Q. 48 Point mutations occur due to spontaneous pairing errors during:
A. DNA replication
B. Deletion of a part of chromosome
C. Addition of gene
D. Presence of aneuploidy
- Q. 49 In phenylketonuria, _____ is not degraded because of defective PAH and consequently accumulates in cells leading mental retardation.
A. Tyrosine
B. Homogentisic acid
C. Phenylalanine
D. Tryptophan
- Q. 50 Which process does not occur during the formation of mRNA?
A. Condensation
B. Hydrolysis
C. Polymerization
D. Transcription

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Biology Test 13 Key

- 1) D
- 2) B
- 3) A
- 4) B
- 5) B
- 6) A
- 7) D
- 8) B
- 9) B
- 10) B
- 11) A
- 12) D
- 13) A

- 14) D
- 15) C
- 16) A
- 17) C
- 18) B
- 19) C
- 20) C
- 21) B
- 22) A
- 23) B
- 24) B
- 25) B
- 26) D

- 27) C
- 28) B
- 29) A
- 30) A
- 31) D
- 32) A
- 33) C
- 34) A
- 35) B
- 36) A
- 37) D
- 38) D
- 39) D

- 40) A
- 41) B
- 42) B
- 43) D
- 44) C
- 45) B
- 46) B
- 47) C
- 48) A
- 49) C
- 50) B

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